

#5
REC'D PCT/PTO 17 JAN 2006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Derek Gates, et al. Confirmation No.4259
Application No. : 10/539,397
Filed : June 15, 2005
Title : POLYMERIZATION OF PHOSPHAALKENES

Grp./Div. : Not Yet Assigned
Examiner : Not Yet Assigned

Docket No. : 55351/DBP/S318

INFORMATION DISCLOSURE STATEMENT
37 CFR § 1.97(b)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Post Office Box 7068
Pasadena, CA 91109-7068
January 17, 2006

Commissioner:

In compliance with the duty of disclosure under 37 CFR §§ 1.56, 1.97 and 1.98, and in accordance with the provisions in the Manual of Patent Examining Procedure §§ 609 and 707.05(b), enclosed is FORM PTO/SB/08A/B listing the references that are known to applicant. Copies of each of the listed FOREIGN PATENT DOCUMENTS and OTHER DOCUMENTS are enclosed. This filing is timely because it is made during one of the periods described in 37 CFR § 1.97(b).

It is respectfully requested that the listed references be considered in the examination of this application and identified on the list of references cited on the patent issuing for this

Express Mail No. EV327884158US

Application No. 10/539,397

application. Applicant also requests that an initialed copy of FORM PTO/SB/08A/B be entered in the application file and returned to applicant with the next communication from the Office in accordance with MPEP § 609.

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP

By D. Bruce Prout
D. Bruce Prout
Reg. No. 20,958
626/795-9900

DBP/rf/djp

Enclosures: PTO/SB/08A/B, w/references
DJP PAS651232.1--01/17/06 2:31 PM

FORM PTO/SB/08A/B (10-01)
Substitute for PTO-1449A/B

INFORMATION DISCLOSURE

STATEMENT BY APPLICANT

(use as many sheets as necessary)

Attorney Docket Number	55351/DBP/S318
Application Number	10/539,397
Filing Date	June 15, 2005
Applicant(s)	Derek Gates, et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned

U.S. PATENT DOCUMENTS

EXAMINER INITIALS	Cite No. ¹	DOCUMENT NUMBER Number - Kind Code ² (If Known)	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE
		5,698,664	12/16/1997	Allcock, et al.

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	Cite No. ¹	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ⁵ (If Known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T ⁶ (<input checked="" type="checkbox"/>)
		SU914569	03-23-1982	Bondarenko	
		906,408	09-19-1962	Bloomfield	
		JP 06016508	01-25-1994	Kanazawa et al	Abstract only

OTHER DOCUMENTS

EXAMINER INITIALS	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Allcock, "Inorganic-Organic Polymers". Adv. Mater. (1994) 6(2):106-115
		Allcock, et al, "Properties of Poly(phosphazene-siloxane) Block Copolymers Synthesized via Telechelic Polyphosphazenes and Polysiloxane Phosphoranimines"; Macromolecules (2001) 34(20):6858-6865.
		Archer, Inorganic and Organometallic Polymers; Wiley-VCH: New York, 2001 (5 pages).
		Carré, et al., "Preparation And Structure Of Phosphonium Ions With Intramolecular P←N Coordination; Novel Diphosphonium Salts And Ionomer Containing Backbone Hypervalent Phosphorus". Eur. J. Inorg. Chem. (2000) 4:647-653.
		Chow, et al, "Thermochemistry of Methylenephosphine: Determination of the Carbon-Phosphorus Double-Bond Strength". J.Phys.Chem. (1989) 93:421-426.
		Chunecjom, et al., "Thionylphosphazene Monomers and Polymers – the Synthesis of Alternating Copolymers of Phosphazenes and Oxo-thiazenes". Angew.Chem.Int.Ed. (1998) 37(13/14):1928-1930.
		Cowley, "Double Bonding Between the Heavier Main-Group Elements: From Reactive Intermediates to Isolable Molecules". Polyhedron (1984) 3(4):389-432.
		Dillon et al, Phosphorus: The Carbon Copy; Wiley: New York (1998), Chapter 5, pages 88-127.

EXAMINER SIGNATURE	DATE CONSIDERED

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.pto.gov or MPEP 901.4. ³Enter Office that issued the document, by the two-letter code (WIPO standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English Language Translation is attached.

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DBP/rf

FORM PTO/SB/08A/B (10-01)
Substitute for PTO-1449A/B

INFORMATION DISCLOSURE

STATEMENT BY APPLICANT

(use as many sheets as necessary)

Attorney Docket Number	55351/DBP/S318
Application Number	10/539,397
Filing Date	June 15, 2005
Applicant(s)	Derek Gates, et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned

OTHER DOCUMENTS

EXAMINER INITIALS	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Dorn et al., "Transition Metal-Catalyzed Formation of Phosphorus-Boron Bonds: A New Route to Phosphinoborane Rings, Chains and Macromolecules". J.Am.Chem.Soc. (2000) 122(28):6669-6678
		Driess et al, "Main Group Element Analogues of Carbenes, Olefins, and Small Rings". Angew.Chem.Int.Ed.Engl. (1996) 35(8):828-856.
		Eshtiagh-Hosseini et al., ¹⁹ F and ³¹ P NMR Characterisation of the Phosphaalkene, CF ₃ P=CF ₂ , Intermediate in the Alkaline Hydrolysis of Bis(trifluoromethyl)phosphine"; Journal of Organometallic Chemistry (1979) 181:C1-C3.
		Gates, Slide presentation entitled "The Utility of the Phosphorous-Carbon Multiple Bond in Polymer Synthesis". Corfu, Greece, June 2002. International Conference on Organometallic Chemistry (ICOMC Conference) (5 pages).
		Gates, Department Seminar, University of Manitoba, December 16, 2002, Slide presentation entitled "A Role for Main Group Multiple Bonds in Polymer Synthesis: New P-C Polymers" (20 pages).
		Gavrilova et al., "Reaction of amides of phosphorus (III) acids with α-bromostyrene in the presence of NiBr ₂ ". Zhurnal Obshchey Khimii (1995) 65(9):1575 (with English Abstract).
		Hackney et al., "A new class of silicon-phosphorus heterocycles: 4-silaphosphorinanes". Journal of Organometallic Chemistry (1989) 359:C36-40.
		Hashidzume et al., "Polymerization of Azastyrene Derivatives. 3. Preparation and Polymerization of N-Methyleneaniline". Macromolecules (1998) 31(2):535-537
		Issleib et al., "Carbosilylierte Phospha-alkene". Z.anorg.allg.Chem. (1981) 473(2):85-90.
		Jutzi, "Stable Systems with a Triple Bond to Silicon or Its Homologues: Another Challenge". Angew.Chem.Int.Ed. (2000) 39(21):3797-3800.
		Kadokawa et al., "New Ring-Opening Polymerization of Phosphorus-Containing Cyclic Monomers". Phosphorous, Sulfur and Silicon (2002) 177:1387-1390.
		Kanbara et al., "Palladium-Catalyzed Polycondensation of Diiiodobenzenes with 1,3-Bis(phenylphosphino) propane and Preparation of Polymer Transition-Metal Complexes". Macromolecules (2000) 33:657-659.
		Kanbara et al., "Preparation of Poly(arylenediphosphine)s by Palladium-Catalyzed Polycondensation: Formation of Polymer Transition-Metal Complexes and Catalytic Reactions". Journal of Polymer Science: Part A: Polymer Chemistry (2002) 40:2637-2647.

EXAMINER SIGNATURE		DATE CONSIDERED	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.pto.gov or MPEP 901.4. ³ Enter Office that issued the document, by the two-letter code (WIPO standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.			

FORM PTO/SB/08A/B (10-01) Substitute for PTO-1449A/B INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	Attorney Docket Number	55351/DBP/S318
	Application Number	10/539,397
	Filing Date	June 15, 2005
	Applicant(s)	Derek Gates, et al.
	Group Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned

OTHER DOCUMENTS

EXAMINER INITIALS	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Klebach et al., "Synthesis of <i>P</i> -Mesityldiphenylmethylenephosphine: A Stable Compound with a Localized P=C Bond". J.Am.Chem.Soc. (1978) 100(15):4886-4888.
		Kobayashi et al, "Ring-opening polymerization 1-(2,4,6-tri- <i>tert</i> -butylphenyl)- phosphirane: direct synthesis of a polyphosphine derivative". Macromolecular Rapid Communications (1994) 15(6):567-571.
		Koe et al., "Synthesis and Spectroscopic Characterization of Heteroatom Polysilyenes: Poly(dialkoxysilylene)s and Evidence for Silicon σ-oxygen <i>n</i> Mixing Interaction". Macromolecules (2001) 34(4):706-712.
		Kroto et al., "The Microwave Spectrum of Phosphaethene, CH ₂ =PH". J.C.S. Chem.Comm. (1980), p. 709.
		Lienhard et al., "Synthesis and Characterization of the New Fluoropolymer Poly(difluorosilylenemethylene); An Analogue of Poly(vinylidene fluoride)". J.Am.Chem.Soc. (1997) 119(49):12020-12021.
		Lu et al, "Poly(diaryl)stannanes: Influence of Substituents on the σ-σ* Transition Energy". Macromolecules (2000) 33(7):2403-2412.
		Manners, "Polymers and the Periodic Table: Recent Developments in Inorganic Polymer Science". Angew.Chem.Int.Ed.Engl. (1996) 35(15):1602-1621.
		Maraval et al., "Rapid Synthesis of Phosphorus-Containing Dendrimers with Controlled Molecular Architectures: First Example of Surface-Block, Layer-Block, and Segment-Block Dendrimers Issued from the Same Dendron". J.Am.Chem.Soc. (2000) 122(11):2499-2511.
		Mark et al, "Inorganic Polymers; Prentice Hall: New Jersey, 1992 (5 pages).
		Mathey, "Expanding the Analogy between Phosphorus-Carbon and Carbon-Carbon Double Bonds". Acc.Chem.Res. (1992) 25(2):90-96.
		Naka et al, "Synthesis of Poly(vinylene-arsine)s: Alternating Radical Copolymerization of Arsenic Atomic Biradical Equivalent and Phenylacetylene". J.Am.Chem.Soc. (2002) 124(23):6600-6603.
		Niecke et al, "Iminophosphanes: Unconventional Compounds of Main Group Elements". Angew.Chem.Int.Ed.Engl. (1991) 30(3):217-237.

EXAMINER SIGNATURE		DATE CONSIDERED	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.pto.gov or MPEP 901.4. ³ Enter Office that issued the document, by the two-letter code (WIPO standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.			

FORM PTO/SB/08A/B (10-01) Substitute for PTO-1449A/B INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	Attorney Docket Number	55351/DBP/S318
	Application Number	10/539,397
	Filing Date	June 15, 2005
	Applicant(s)	Derek Gates, et al.
	Group Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned

OTHER DOCUMENTS		
EXAMINER INITIALS	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Norman, "Stable Compounds of the Heavier Group 14 and 15 Elements Involving pπ-pπ Multiple Bonding: An Overview of the First Decade". Polyhedron (1993) 12(20):2431-2446.
		Obata et al., "Synthesis of New Linear Polymers Containing Phosphorus Atom in the Main Chain by the Radical Polyaddition: Addition Polymers of Phenylphosphine with 1,4-Divinylbenzene or 1,4-Diisopropenylbenzene and Their Properties". Journal of Polymer Science: Part A:, Polymer Chemistry (1994) 32:475-483.
		Pangborn et al., "Safe and Convenient Procedure for Solvent Purification.", J. Organometallics (1996) 15(5):1518-1520.
		Patten et al, "Living" Titanium(IV) Catalyzed Coordination Polymerizations of Isocyanates". J.Am.Chem.Soc. (1991) 113(13):5065-5066.
		Power, "π-Bonding and the Lone Pair Effect in Multiple Bonds between Heavier Main Group Elements". Chem.Rev. (1999) 99(12):3463-3503.
		Power, "Homonuclear multiple bonding in heavier main group elements.", J.Chem.Soc., Dalton Trans. (1998) 18:2939-2951.
		Regitz, "Phosphaalkynes: New Building Blocks in Synthetic Chemistry", Chem.Rev. (1990) 90(1):191-213.
		Sanji et al, "Helical-Sense Programming through Polysilane- Poly(triphenylmethyl methacrylate) Block Copolymers", J.Am.Chem.Soc. (2001) 123(50):12690-12691.
		Sharkey, "Polymerization through the Carbon-Sulfur Double Bond", Adv. Polym. Sci. (1974) 17:73-103.
		Tsang et al., "Radical Copolymerization of a Phosphaalkene with Styrene: New Phosphine-Containing Macromolecules and Their Use in Polymer-Supported Catalysis". Angew.Chem.Int.Ed. (2004) 43:5682-5685.
		Tsang et al, "The Addition Polymerization of a P=C Bond: A Route to New Phosphine Polymers". J.Am.Chem. Soc. (2003) 125(6):1480-81.
		van der Knaap et al, "A Nucleophilic Reaction of a Phosphaalkene: The Methylation of Mesityldiphenylmethylenephosphine". Tet Lett (1982) 23(19):2037-2040.
		Vogl, "Addition Polymers of Aldehydes.", J. Polym. Sci: Part A: Polymer Chemistry (2000) 38(13):2293-2299.

EXAMINER SIGNATURE		DATE CONSIDERED	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.pto.gov or MPEP 901.4. ³ Enter Office that issued the document, by the two-letter code (WIPO standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.			

FORM PTO/SB/08A/B (10-01) Substitute for PTO-1449A/B INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)	Attorney Docket Number	55351/DBP/S318
	Application Number	10/539,397
	Filing Date	June 15, 2005
	Applicant(s)	Derek Gates, et al.
	Group Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned

OTHER DOCUMENTS		
EXAMINER INITIALS	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article, title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Walker et al, "Synthesis and Size Control of Gold Nanoparticles Stabilized by Poly(methylphenylphosphazene)". J.Am.Chem.Soc. (2001) 123(16):3846-3847.
		Weber, "Phosphaalkenes with Inverse Electron Density", Eur. J. Inorg. Chem. (2000) 2000(12):2425-2441.
		West, "Chemistry of the Silicon-Silicon Double Bond", Angew.Chem.Int.Ed.Engl. (1987) 26(12):1201-1211.
		Wright et al, "Poly(<i>p</i> -phenylenephosphaalkene): A π -Conjugated Macromolecule Containing P=C bonds in the Main Chain". Agnew.Chem.Int.Ed. (2002) 41(13):2389-2392.
		Yoshifuji, "Sterically protected organophosphorus compounds in low co-ordination states". J.Chem.Soc., Dalton Trans. (1998) 20:3343-3349.

DJP PAS651191.I-*01/17/06 2:03 PM

EXAMINER SIGNATURE		DATE CONSIDERED	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.pto.gov or MPEP 901.4. ³ Enter Office that issued the document, by the two-letter code (WIPO standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.			

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DBP/rf